CONTENTS OF VOL. 69 Nos 1–6

NUMBER 1—JANUARY

Polymorphic transformations of titania induced by ball milling
By S. Begin-Colin, G. Le Caer, A. Mocellin and M. Zandona 1

The cracking of ice during rapid unloading
By M. L. Couture and E. M. Schulson 9

Transmission electron microscopy analysis of the planar defects in an $Al_{62}Cu_{25.5}Fe_{12.5}$ icosahedral quasicrystal irradiated with Ar^+ ions
By X. Yang, Z. Wang and R. Wang 15

On the origins of 'forbidden' 100-type spots in electron diffraction patterns from the A15 compounds Nb_3Al, Cr_3Si and V_3Si
By M. Aindow, L. S. Smith, J. Shyue, M. H. Loretto and H. L. Fraser 23

The role of matrix dislocations in growth ledge formation on f.c.c.–b.c.c. interfaces in a Ni–Cr alloy
By T. Furuhara, and T. Maki 31

Time-dependent solutions of the vacancy diffusion creep equations
By B. Burton 37

Fractal carbon filaments grown on insulators under irradiation in an electron microscope
By F. Banhart 45

NUMBER 2—FEBRUARY

Structures atomiques de dislocations à l'intersection de fautes d'empilement dans un cristal c.f.c. à base (Ni, Co)
Par M. Loubradou, R. Bonnet et J. M. Pénisson 53

Instabilities of planar interfaces between two stressed materials
By N. Junqua and J. Grilhé 61

Phasons at the growing surface of icosahedral quasicrystals
By M. A. Fradkin 71

Coulomb interaction in the layered electron gas
By A. Gold 77

Cluster-based model for the icosahedral Al–Cu–Li quasicrystal
By M. Mihalkovič and P. Mrafko 85

Two-colour Penrose tiling
By X. Z. Li, J. M. Dubois and K. H. Kuo 93

Structural transformations in foam?
By D. WEAIRE 99

A counter-example to Kelvin's conjecture on minimal surfaces
By D. WEAIRE and R. PHELAN 107

NUMBER 3—MARCH

A proper model of a deformation twin for twin-intersection problems
By P. MÜLLNER and C. SOLENTHALER 111

Deformation twinning in a face-centred icosahedral Al–Cu–Fe quasicrystal
By J. E. SHIELD and M. J. KRAMER 115

On the determination of Burgers vectors of type B dislocations in an $Al_{70}Co_{15}Ni_{15}$ decagonal quasicrystal by convergent-beam electron diffraction
By Y. F. YAN, Z. ZHANG and R. WANG 123

The interaction of dislocations and planar faults in solids
By G. SCHOECK 131

Dynamic high-resolution electron microscopy of diffusion bonding between zinc oxide nanocrystallites at ambient temperature
By T. KIZUKA and N. TANAKA 135

Study of decagonal quasicrystalline phase formation in the Al–Ni–Fe alloy system
By U. LEMMERZ, B. GRUSHKO, C. FREIBURG and M. JANSEN 141

Ultrasonic determination of the superconducting energy gap in domain boundaries of melt-textured $YBa_2Cu_3O_7$
By M. LEVY, Z.-X. LI, B. K. SARMA, S. SALEM-SUGUI JR., and D. SHI 147

Insulator–metal transitions in high-T_c superconductors
By N. F. MOTT 155

The energy level of size distribution probability functions
By R. D. COHEN 159

Erratum 167

NUMBER 4—APRIL

The shape of a blocked deformation twin
By P. MÜLLNER and C. SOLENTHALER 171

Angularly dependent embedding potentials and structural prediction
By S. R. NISHITANI, P. ALINAGHIAN, C. HAUSLEITNER and D. G. PETTIFOR 177

Structural transformation of the (233)[011], $\Sigma = 11$ tilt grain boundary in silicon
By H. O. K. KIRCHNER, J. THIBAULT and J. L. PUTAUX 185

A first-principles study of compression twins in h.c.p. zirconium
By J. R. Morris, Y. Y. Ye, K. M. Ho, C. T. Chan and M. H. Yoo 189

High-resolution electron microscopy study of γ–γ_T twin interfaces in the lamellar structure of TiAl-based alloys
By Ch. Ricolleau, A. Denquin and S. Naka 197

***In situ* observation of decomposition of quasicrystal precipitates in Al–Fe alloy**
By X. D. Zhang and M. H. Loretto 205

The domain configuration of the $Au_{11}In_3$ phase
By K. Kifune, K. Yamamoto, S. Maruyama and G. van Tendeloo 211

Analytic solution of mode-I crack in materials with nonlinear behaviour
By Wang Wen-Xin and Fan Tian-You 215

On the existence of r^{-n} singular fields at a bimaterial wedge or triple junction
By X. Markenscoff and H. O. K. Kirchner 223

Order–disorder transformation in an Al–Ni–Co decagonal quasicrystal
By K. Edagawa, H. Sawa and S. Takeuchi 227

Radiation-hardened metal–oxide–semiconductor structure
By S. Kaschieva 235

Field-dependent effective temperature of localized charge carriers in hopping systems with a random energy distribution
By V. I. Arkhipov and H. Bässler 241

Transients in antiphase coarsening
By M. Papoular, D. Camel and F. Bley 247

NUMBER 5—MAY

Determination of the interfacial structure of $YBa_2Cu_3O_7/SrRuO_3$ thin-film heterostructures
By C. L. Jia, R. Dömel and K. Urban 253

Homogeneous crystalline nucleation via atomic density fluctuations in the liquid state: applications
By P. J. Desré 261

Transmission electron microscopy contrast from static atomic displacements in homogeneous random alloys
By F. Glas 269

High-resolution electron microscopy study of spontaneous alloying in gold clusters
By H. Mori, H. Yasuda and T. Kamino 279

The effect of grain size on fluorine gas bubble formation in calcium fluoride during electron-beam irradiation
By R. Zanetti, A. L. Bleloch, M. P. Grimshaw and G. A. C. Jones 285

Observation and simulation of a small dislocation loop in Al–Pd–Mn face-centred icosahedral quasicrystal
By Z. G. WANG, M. X. DAI and R. WANG 291

Kelvin's conjecture on minimal froths and the counter-example of Weaire and Phelan
By N. RIVIER 297

NUMBER 6—JUNE

Dissociation of sessile dislocations
By V. PAIDAR and D. CAILLARD 305

Fivefold and threefold-type dislocations in an Al–Cu–Fe icosahedral quasicrystal identified by defocus convergent-beam electron diffraction
By JIANGLIN FENG and RENHUI WANG 309

The Hall coefficient of $La_{2-x}Sr_xCuO_4$
By N. F. MOTT 317

Uniaxial pressure dependence of the critical field anisotropy in UPt_3
By M. BOUKHNY, G. L. BULLOCK, B. S. SHIVARAM and DAVID G. HINKS 319

Thermal annealing of light-induced defects in hydrogenated amorphous silicon: evidence for hole-induced annealing
By R. MEAUDRE, S. VIGNOLI and M. MEAUDRE 327

Current fluctuations and switching effects in hydrogenated amorphous silicon/molybdenum multilayer thin films
By TILO P. DRÜSEDAU and ANDREAS N. PANCKOW 333

Structural model of a face-centred icosahedral phase in Al–Mg–Li alloys
By A. P. TSAI, A. YAMAMOTO, A. NIIKURA, A. INOUE and T. MASUMOTO 343

Stable Zn–Mg–rare-earth face-centred icosahedral alloys with pentagonal dodecahedral solidification morphology
By A. NIIKURA, A. P. TSAI, A. INOUE and T. MASUMOTO 351

Subject index 357

Index of authors (with titles) 361